CLAIMS

1. Brushless electric motor comprising a stator, which has pole elements, and a rotor, which is mounted rotatably in relation to the stator and comprises magnet poles of magnetic powder material bonded to form a body and a back yoke body carrying the magnet poles, the magnet poles being formed by at least one molded magnetic body, which is molded with a back yoke side onto the back yoke body.

2. Electric motor according to claim 1, wherein the back yoke body has positively connecting elements, onto which the at least one molded magnetic body is molded adaptively in terms of positive engagement.

3. Electric motor according to claim 2, wherein the positively connecting elements are effective in the radial direction.

4. Electric motor according to claim 1, wherein the at least one molded magnetic body forms an annular body which is molded onto the back yoke body.

5. Electric motor according to claim 4, wherein the at least one molded magnetic body butts against the back yoke body in an azimuthally closed manner.

6. Electric motor according to claim 1, wherein the back yoke body with a region carrying the molded magnetic body is a molding part of a mold that is lost during the molding of the at least one molded magnetic body.

7. Electric motor according to claim 1, wherein a region of the back yoke body carrying the at least one molded magnetic body has thermal expansion properties that are of the same order of magnitude as the thermal expansion properties of the at least one molded magnetic body.

8. Electric motor according to claim 1, wherein the back yoke body is produced from solid steel.

9. Electric motor according to claim 8, wherein the back yoke body is a one-piece steel body.

10. Electric motor according to claim 1, wherein the back yoke body is formed as a stack of metal laminations.

11. Electric motor according to claim 1, wherein the back yoke body is formed from bonded powder material as a molded back yoke body.

12. Electric motor according to claim 11, wherein the molded back yoke body is molded onto a carrier body of the rotor.

13. Electric motor according to claim 12, wherein the carrier body of the rotor is a one-piece steel body.

14. Electric motor according to claim 1, wherein the molded magnetic body is a sintered magnetic body.

15. Electric motor according to claim 11, wherein the molded back yoke body is a sintered back yoke body.

16. Electric motor according to claim 1, wherein the molded magnetic body is produced from plastic-bonded magnetic powder material.

17. Electric motor according to claim 11, wherein the molded back yoke body is produced from plastic-bonded magnetic powder material.

18. Method for producing rotors for brushless electric motors that comprise magnet poles of bonded magnetic powder material and also a magnetic back yoke body, at least one molded magnetic body of bonded magnetic powder material being molded onto the back yoke body.

19. Method according to claim 18, wherein during the production of the at least one molded magnetic body as a sintered magnetic body, a green magnetic body of sintering material is molded onto the back yoke body and in that the sintered magnetic body is formed by sintering from the green magnetic body molded onto the back yoke body.

20. Method according to claim 19, wherein the green magnetic body is molded onto the back yoke body by pressing on sintering powder.

21. Method according to claim 19, wherein the green magnetic body is molded from the sintering powder in a mold.

22. Method according to claim 21, wherein the sintering powder is pressed against the back yoke body in a mold receiving the back yoke body and thereby molded to form the green magnetic body.

23. Method according to claim 22, wherein the back yoke body forms a lost molding part of the mold during the molding-on of the green magnetic body.

24. Method according to claim 18, wherein hard-magnetic sintering material is used as the sintering material.

25. Method according to claim 18, wherein corrosion-insensitive sintering material is used as the sintering material.

26. Method according to claim 18, wherein a material that has a thermal expansion less than that of the sintering material is used for the back yoke body.

27. Method according to claim 18, wherein material that has a thermal expansion of the same order of magnitude as that of the sintering material is used for the back yoke body.

28. Method according to claim 18, wherein the back yoke body is fixed on the carrier body before the molding-on of the green magnetic body.

29. Method according to claim 18, wherein during the production of the at least one molded magnetic body, a mixture comprising plastic and magnetic powder material is molded onto the back yoke body under the effect of pressure and heat.

30. Method according to claim 18, wherein during the production of the at least one molded magnetic body, a composition comprising plastic and magnetic powder material is molded onto the back yoke body.

31. Method according to claim 29, wherein the molded magnetic body is molded onto the back yoke body in a mold with the back yoke body as a molding part of the mold.

32. Method according to claim 18, wherein the back yoke body is fixed on a carrier body of the rotor.

33. Method according to claim 18, wherein a solid steel body is used as the back yoke body.

34. Method according to claim 18, wherein a stack of metal laminations is used as the back yoke body.

35. Method according to claim 34, wherein the stack of metal laminations is held together by the carrier body.

36. The method as claimed in claim 18, wherein the back yoke body is produced from soft-magnetic powder material as a molded back yoke body.

37. Method according to claim 36, wherein the molded back yoke body is produced as a sintered back yoke body.

38. Method according to claim 37, wherein the sintered back yoke body is produced by forming a green back yoke body from sintering material and sintering the green back yoke body.

39. Method according to claim 38, wherein the green back yoke body is produced by pressing sintering powder.

40. Method according to claim 39, wherein the green back yoke body is produced from sintering powder in a mold.

41. Method according to claim 37, wherein the green back yoke body is molded onto the carrier body.

42. Method according to claim 41, wherein the green back yoke body is molded onto the carrier body by pressing on sintering powder.

43. Method according to claim 42, wherein the sintering powder is pressed onto the carrier body in a mold receiving the carrier body and is thereby molded to form the green back yoke body.

44. Method according to claim 37, wherein the green back yoke body is sintered and then the green magnetic body is molded onto the latter.

45. Method according to claim 37, wherein the green magnetic body is molded onto the green back yoke body and both green bodies are subsequently sintered.

46. Method according to claim 36, wherein during the production of the back yoke body, a mixture comprising plastic and soft-magnetic powder material is molded under the effect of pressure and heat.

47. Method according to claim 36, wherein during the production of the back yoke body, a composition comprising plastic and soft-magnetic powder material is molded.

48. Method according to claim 46, wherein, during molding, the back yoke body is molded onto the carrier body.

49. Method according to claim 48, wherein the back yoke body is molded onto the carrier body in a mold with the carrier body as a molding part of the mold.